

Promoting A Sustainable Energy Future

Cape & Islands Energy Technology Strategy Project Kickoff Meeting, 11.15.07 Woods Hole Research Center

Chris Powicki

chrisp@weeinfo.com

508.362.9599

*Principal, Water Energy & Ecology Information Services
(weeinfo.com)*

*President, Cape & Islands Renewable Energy Collaborative
(cirenew.org, cirenew.info, cigogreen.org)*

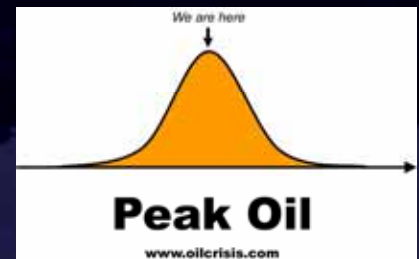
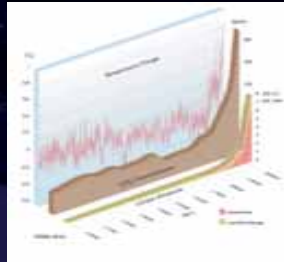
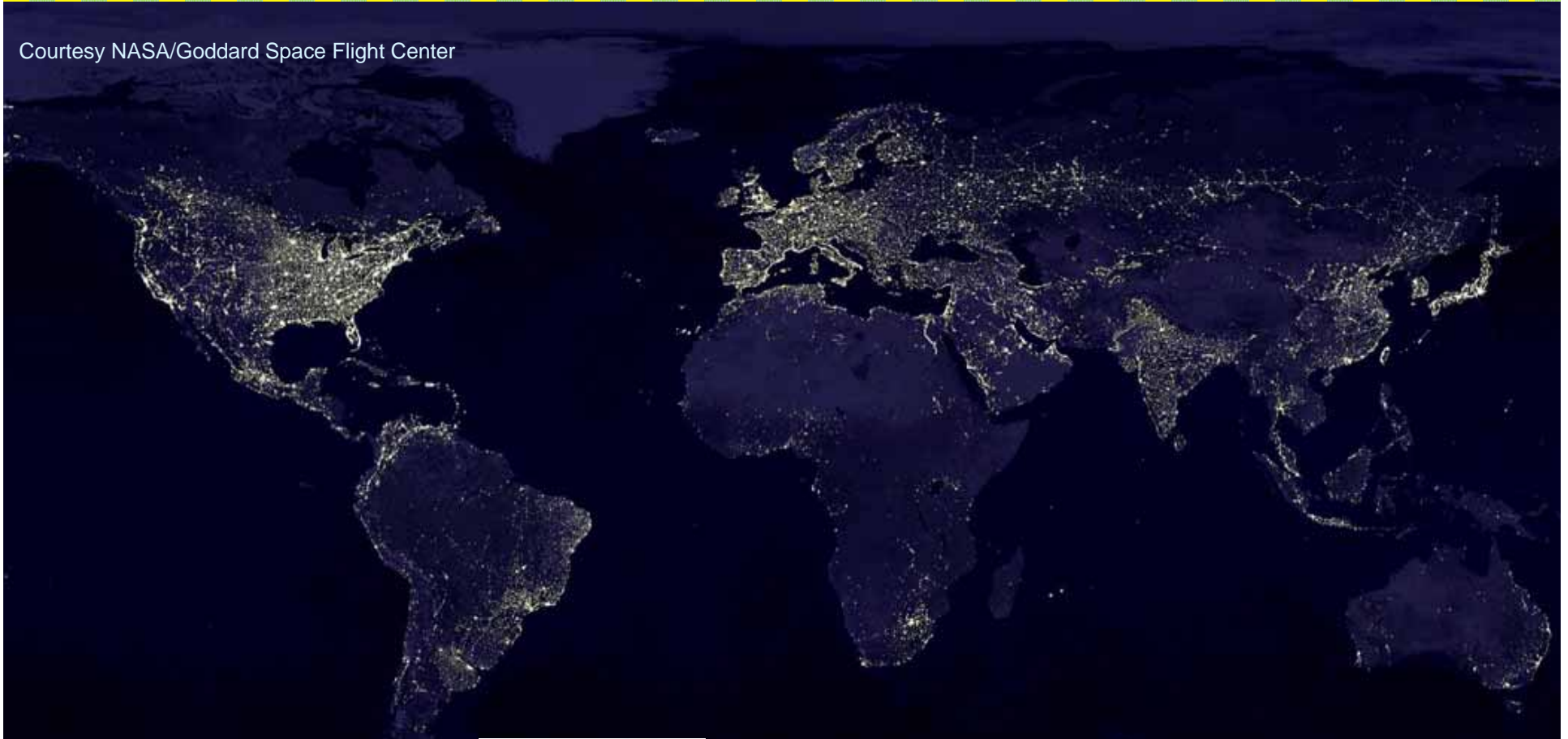


Outline

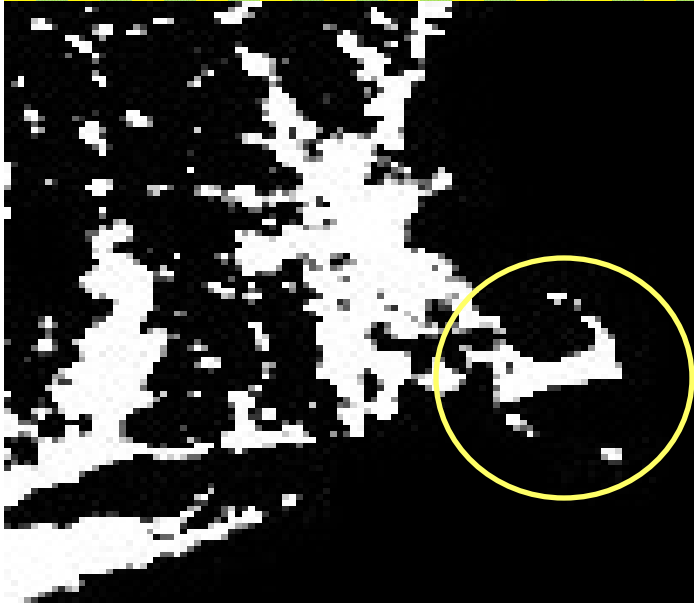
- **Introduction**
- **Beyond Cape Wind Process**
- **Cape & Islands Regional Energy Action Plan (CIREAP)**
- **Energy Technology Strategy Project**
- **Breakouts & Group Discussion**

Global Challenges

Courtesy NASA/Goddard Space Flight Center



Regional & Local Solutions: Madisonian Approach



Cape & Islands Ener-Geography

- End of Supply Chain
- Tailpipe of Northeast
- Remnant of Previous Climate
- Regionally Abundant Renewables

CIREC Overview



Participatory Collaborative

- Goals: Work together to promote energy sustainability; maximize local benefits and minimize adverse impacts from energy supply and use
- Organizations/agencies: Cape & Islands Self-Reliance, Cape Clean Air, Cape Cod Chamber of Commerce, Cape Cod Commission, Cape Cod Community College, Cape Cod Economic Development Council, Cape Cod Renewable Fuels Partnership, Cape Cod Technology Council, Cape Cod National Seashore, Cape Light Compact, Clean Power Now, Housing Assistance Council, Soundkeeper/Alliance to Protect Nantucket Sound, Waquoit Bay Reserve, Wellfleet Bay Audubon, Woods Hole Research Center
- Businesses: installers, consultants, architects, builders
- Officials: municipal appointees to town energy committees and regional agencies

Membership Organization

- Regional chapter of Northeast Sustainable Energy Association (NESEA)

Support Mechanisms

- In-kind support and supplemental funding from participants
- Grant funding; membership dues; project-related income

Beyond Cape Wind Process – Activities & Outcomes

Activities

- **Stakeholder Survey, March – April 2005**
- **Facilitated Meetings With Ground Rules for Discussion, April 2005 – May 2006**
- **“Voting Energy” Candidate Survey, August – October, 2006**
- **Stakeholder Visioning Session, December 1, 2006**

Outcomes

- **Agreement to work together**
- **Shared concerns**
- **Points of concurrence and goals for future action**



Courtesy LANDSAT.ORG

Beyond Cape Wind: Shared Concerns



10 Highest-Priority “True Costs”

1. Impacts of Energy Costs on Affordability & Competitiveness
2. Economic Costs of Externalized Impacts
3. Economic Effects of Relying on Energy Imports
4. Contributions of Fossil Fuel Combustion to Mercury Concentrations & Fish Contamination
5. Contributions of Fossil Fuel Combustion to Nutrient Loading in Groundwater & Surface Waters
6. Effects of Fossil Fuel Combustion on Air Quality & Public Health
7. Effects of Fossil Fuel Reliance on Ecological Communities
8. Contributions of Stationary & Mobile Sources and Local, Regional & National Sources to Environmental Quality Problems
9. Possible Impacts of Global Climate Change on Local Communities
10. Social Ramifications of Externalized Impacts

Beyond Cape Wind: “Voting Energy” Results

Energy Future



100% of respondents ...

- believe the Cape & Islands should be working aggressively toward a long-term goal of energy independence.
- believe local communities should receive long-term, stable power supply contracts from offshore renewables projects.
- support creation of energy cooperative to buy green power at wholesale rates, own and operate projects and systems, provide direct control over the energy future, and deliver benefits to residents and businesses.



92% of respondents ...

- support community-based siting and installation of large-scale wave and/or tidal energy projects not visible from land.
- believe local communities should receive opportunities for public ownership of offshore renewables projects.
- believe offshore renewables projects should
 - include investment in complementary education, research, and economic development initiatives in local communities.
 - be integrated with demonstrations of hydrogen, plug hybrid, and other advanced energy systems.

Beyond Cape Wind: Points of Concurrence

Energy Present & Energy Future

- Reliance on fossil fuels has major adverse impacts and poses growing risks, but no single entity is charged with addressing them.
- Stakeholders and communities should be working aggressively toward energy independence.
- Conservation, efficiency and distributed renewables are critical across the electricity, heating fuel, and transportation fuel sectors.
- Large-scale development of ocean energy resources is the critical path toward independence.

Needs for Managing the Energy Transition

- Coordinated, community-based processes are necessary to maximize local benefits and minimize adverse impacts.
 - Develop regional/local goals and strategies relating to economic development, emissions reduction, and energy independence
 - Identify ways to harness and use renewables in ways that protect and enhance the region's economy and ecosystems
 - Explore directions and control decisions regarding ocean energy development
 - Empower the public and other stakeholders to take action



Credits: Ocean Power, GE, MCT

Beyond Cape Wind: 12.01.06 Stakeholder Visioning

Participants

- Environmental advocacy groups, regional and state agencies, businesses, educational and research institutions, nonprofits, and business associations

Objectives

- Define overarching energy-related goals for the Cape & Islands region
- Develop organized input to Patrick-Murray Transition Team's community working groups
- Identify priority actions for Cape & Islands Regional Energy Action Plan (CIREAP)

Approach

- Facilitation of group discussion
- Breakouts
 - Energy & Economy
 - Energy & Environment
 - Energy & Well-Being



Credit: Business Wire

CI REAP Visioning - Outcomes

2020 Goals

- Reduce direct use of fossil fuel for heating and transport applications by 50%, relative to 2006 consumption
- Generate sufficient renewable energy to meet 100% of net electricity needs

Recommendations for Patrick-Murray Transition Team

- Develop Comprehensive Energy Strategy
- Commit to Regional Greenhouse Gas Initiative as 1st Step
- Restructure/Enhance Energy Efficiency & Renewable Energy Programs
- Stimulate & Organize Economic Activity in the Clean Energy Cluster
- Encourage Community-Based Action & Decision-Making
- Lead by Example

Collaborative Statement of Purpose: *Progress, Not Sacrifice!*

“We are pursuing energy independence to strengthen our economy, protect our environment, improve well-being in local communities, and control our future. We endeavor to make affordable and clean energy available to all while doing more than our share to address global and intergenerational challenges relating to energy supply and use, climate change, and sustainable development.”

CI REAP Status



“CI GoGreen: Report to Community” (January 2008)

- 2007 Progress & 2008 Emphases: Public Involvement & Community Outreach/Assistance
- Goals by Working Group: *Community Planning & Public Outreach, Economic Development, Policy & Options Analysis, Technology Strategy*

1. Collaborative Action Plan

- Involve the public, stakeholder groups, and communities by making energy awareness and activism appealing
- Engage stakeholders in defining and pursuing objectives
- Enhance the roles of existing organizations, agencies, and service providers
- Create and apply new approaches, technologies, policies, and institutions

2. **Qualitative** Action Plans for Residents, Visitors, Communities, Students/Schools, Businesses/Organizations & Agencies/Officials

- Increase conservation and efficiency across all sectors
- Encourage distributed applications of renewable and clean technologies
- Promote broad perspective on going green and emphasize local/global benefits

Technology Strategy Working Group



Objectives

- Examine conservation, efficiency, and renewable energy options across all sectors
- Identify priority technologies, measures, and R&D activities
- Develop strategy to achieve 2020 goals
- Create *quantitative* action plans for stakeholders

EPRI Project: “Renewable Generation & Electrification – Technology Strategy for a Carbon-Constrained World”

- Engage industry, manufacturers, developers, agencies, funders
- Develop comprehensive 2006 energy inventory and future scenarios
- Identify applications and projects to be assessed
- Use tools and data from EPRI and other sources to conduct technical/economic analyses
- Develop technology strategy detailing options, tradeoffs, and recommendations for achieving 2020 goals

2020 CI REAP Goals - Characteristics

50% Less Fossil Fuels, 100% Renewable Generation

- Very ambitious – intended to be stretch targets
- Efficiency, conservation, renewable fuel substitution, and emissions reduction intrinsic to both goals
- Increased energy independence and massive emissions reduction implicit
- No limit on electricity because increased electrification is critical to long-term climate stabilization
- Goals are technologically feasible
 - Proposed/contemplated offshore wind and tidal projects sufficient in scale to meet future demand
 - Buildings and transport systems very inefficient; cleaner and green options available or emerging
- Goals currently of uncertain practical feasibility
- Organized approach required to pursue them

Technology Priorities



- Upgrade air sealing and insulation
- Resize and replace heating plants with high-efficiency systems
- Install programmable thermostats
- Increase use of solar thermal, PV, land-based wind, and biodiesel
- Build green: passive solar, beyond-code envelope
- Install combined heat-and-power systems
- Buy efficient conventional vehicles, gas-electric hybrids, and clean diesels
- Host demonstrations: renewable generation w/ plug hybrid and w/ hydrogen production systems
- Host test facility and community-scale demonstrations of transitional/deepwater wind, wave, and/or tidal systems
- Host large-scale ocean renewables projects

- Make consumers aware of rebates, grants, tax incentives, and no/low-interest loans; streamline processes for taking advantage
- Use policy/pricing levers to increase incentives and reduce barriers to implementation
- Create process supporting community-based siting and development of offshore projects in state and federal waters

Issues for Today

*What should the study examine? How will the study proceed?
How would you like to contribute?*

Breakout Groups

1. Fixing Buildings & Managing Demand

- Focus on greening existing structures and changing behavior

2. Growing Smart & Greening Infrastructure

- Focus on sustainable development

3. Moving Offshore & Delivering Back

- Focus on demonstrating and deploying wind, tidal, and wave systems

Group Discussion

Next Steps

2006 Inventory: Total, Regional, Community

- Easy (in theory) - electricity and natural gas
- Hard - gasoline, diesel, heating oil, propane, etc.

Scenarios, Options & Analytical Issues

- Consumption Projections: EIA, ISO-NE, Utility
- Commodity Prices: Fuels, Emissions
- State & Federal Policies: RGGI, Green Communities (RPS, APS, Net Metering), Feed-In Tariffs, PTC, ITC
- Ownership: IPP, Cooperative, Consumer

Process & Schedule

- Nov - Dec: Inventory, Scenarios/Options, “Specifications”
- Jan - Feb: Technical, Economic & Environmental Analysis
- March: Release of Draft Strategy

How would you like to contribute?